



The ILLINOIS ENGINEER

ILLINOIS SOCIETY OF PROFESSIONAL ENGINEERS
INCORPORATED

Affiliated with the National Society of Professional Engineers
631 East Green Street Champaign, Illinois



VOLUME XXX, NO. 7

SUMMER ISSUE

JULY, 1954

THE ILLINOIS ENGINEER—THIS MONTH

Central Illinois Rewards Math Excellence

A highly commendatory action was taken recently by Central Illinois Chapter. Awards for excellence in mathematics are to be given to two Decatur high school students. It is this kind of encouragement that will offset the drift of educational processes away from the philosophy that training in the Three R's is all important, toward the situation where mental discipline is secondary and, "happy, socially-adjusted children," come first. Present educational methods are summed up by the statement made by the little girl who didn't like to go to school where she HAD TO DO WHAT SHE WANTED TO DO. In any case as stated recently by General Sturgis such methods do not produce engineers and scientists.

Glance at the figures released by the Manpower Commission of Engineer's Joint Council in the adjacent column, which compare the number of engineer trainees in this country and in Russia. These add emphasis to the seriousness of our engineer shortage.

Central Illinois Chapter has taken worthwhile action. Similar action by other chapters should be encouraged.

W. A. OLIVER, Editor

BOARD MET ON JUNE 5TH

The Board of Direction met at Decatur Y.M.C.A. on June 5th, last. The usual reports of officers, committees and chapter representatives were heard. By action of the Board the report of the Exploratory Committee will be published in the October issue of THE ILLINOIS ENGINEER at which time the reorganization proposals will be submitted to the membership for consideration by letter ballot.

COST OF LIVING INDEX

The cost of living correction factor to be applied to the I.S.P.E. Schedule of Minimum Fees and Salaries is based upon the Consumer Price Index of the 1947-49 average as determined by the Bureau of Labor Statistics. On the 1947-49 base the correction for May, 1954 is 115.0.

For those who are still using the old schedule the correction factor is 192.3 based upon the 1935-39 average.

SCIENCE AND TECHNOLOGY IN THE USSR

(Information from Manpower Commission of E. J. C.)

The March 1 issue of *Newsweek* devotes four pages to an appraisal of Russian science and technology, summarizing and bringing up to date the survey that was made by the participants in the AAAS symposium on Soviet Science at Philadelphia in December 1951, and that made its appearance in book form in 1952 ("Soviet Science," AAAS, Washington, D. C.). Some use is also made of the facts presented by M. H. Trytten at Boston in December 1953 in the EMC-SMC sponsored symposium on "The Utilization of Specialized Manpower Abroad."

Anyone who is inclined to discount the effort that the USSR is making to train and to utilize specialized personnel should be brought up short by the facts and figures assembled by Dr. Trytten. Comparisons with the U. S. are given in the following table which employs 1951 statistics as a base:

	USSR	U.S.
Secondary school enrollment.....	37,000,000	30,470,000
College enrollment	916,000	2,116,000
Ph.D. or equivalent degrees conferred...	5,500	7,700
Engineers graduated (1953).....	43,000	24,000
Engineers in the labor force.....	400,000	500,000
Scientists in the labor force.....	150,000	243,000

There is no element in this comparison from which Americans can draw satisfaction or take comfort. Following seven years of elementary training, students are directed into schools that correspond to our high schools, into "technicums" (or sub-professional training schools), or into trade schools. With respect to college and university training, Dr. Trytten says:

"... the Russian higher educational establishments cover a five-year period. It must be borne in mind that American institutions of higher education generally include in their enrollment large numbers of people who have no stated professional goals during the course of their training. Consequently, the enrollments in American education must be discounted to allow for the large numbers of people who go to college merely to enrich their personal educational backgrounds without expecting to use their training specifically to achieve a vocational objective. . . . Enrollments in Russian institutions, on the other hand, are more closely related to the needs of the Russian State for trained personnel for its activities.

SUBSCRIPTION RATES

\$2.00 per year in advance to members of the Illinois Society of Professional Engineers. \$4.00 per year in advance to non-members in U.S.A. and possessions, Canada, and Mexico. Foreign \$6.00. Single copies 40c.

Published by the Illinois Society of Professional Engineers, Inc., at 631 East Green Street, Champaign, Illinois.

Entered as Second Class Matter April 27, 1949, at the Post Office, Champaign, Illinois.

"Considering the training of specialists, therefore . . . the yield in trained professional personnel of the Russian system is greater in numbers than is our own for the same number of students enrolled. It should also be noted that the American educational statistics do not differentiate with respect to the undergraduate and graduate students, whereas the enrollments given above for Russian educational institutions do not include those who are in the graduate school and are being trained beyond the university level. . . .

"One feature of the Russian educational system which needs additional emphasis is the technical institute or technicum training which was referred to earlier. These institutes are an extremely significant part of the training effort in the USSR. There is no counterpart to them in the United States, excepting for a small number of technical institutes, some independent and some set up by large industrial establishments, and the junior colleges of the United States which emphasize technical training. There were in the USSR 3,500 of these institutes with an enrollment of 1,200,000 students in 1952, with about 350,000 graduates per year. These schools have three-or-four-year courses. About fifty thousand of these graduates seem to be in fields related to engineering. Because of this substantial training program, the number of technicians or semiprofessional engineers available to the Russian economy appears larger than the number of professional engineers in the ratio of approximately two to one."

Even in the schools that closely approximate our secondary schools, about 25% of the curriculum is devoted to mathematics, physics, and chemistry. Thus science and technology occupy a prominent place throughout the educational system. Although we have no desire to regiment education at any level, one must wonder whether we are not entirely too casual in our emphasis upon the science and technology on which our security and economy depend.

GUNLOCK AND DEMENT PROMOTED

(Prepared by P. E. ROBERTS, Executive Secretary)

Confirmation of the appointment of Virgil E. Gunlock as chairman of Chicago Transit Authority by Governor Stratton was made on June 16th. On the same day the City Council confirmed the appointment of George E. DeMent as Acting Commissioner of Public Works, City of Chicago.

It is always pleasant to be the bearer of good news but it is especially pleasant in this instance because Mr. Gunlock has served the Society long and faithfully as chairman of various committees, as state Vice-President, and as State President. He has served as Chairman of the Chicago advisory committee of ESPS and is presently serving as Vice-President of NSPE.

George DeMent is another faithful worker about whom it is pleasant to bring good news. He has been chairman of various state committees, but his two most important tasks in the interest of the Society were his most able handling of the dinner held during the Centennial of Engineering in 1952 and his work as NSPE National Director.

Both men are products of the College of Engineering, University of Illinois. George's undergraduate athletic prowess is unknown but his present ability on the golf course is well known. Gunny on the other hand was on the Varsity Wrestling squad while an embryo engineer,

and his present interest is hunting, and breeding beagles. He is also a past officer in a city gun club, together with a variety of church and civic interests.

The best wishes of the Illinois Society go with both in their new positions. May they continue to enjoy their vocational work and their extra curricular activity in the State and National Societies.

M. E. AMSTUTZ RECEIVES LETTER FROM SYDNEY M. WOOD

Mr. and Mrs. Melville Amstutz,
Atlantic Ave.,
Waukegan, Illinois.

Dear Folks:

There are times with all of us, I suppose, when we ask ourselves: "I wonder what he is doing now," meaning one of the old crowd, now among the missing and half-forgotten faces. Something like that was in my mind when I mailed you that card from Montego Bay, Jamaica.

It has occurred to me that it might interest some of the members I came to know and like so well to hear a little bit more about what one of the "old" fellows has been doing. It may seem queer for me to say it, but it surely appears correct for me to state that I feel that my life and career as an engineer has only just begun. On this coming Sunday I will reach that age when we were supposed to call it quits, i.e., the age of three score and ten, but I never felt so well or at least never felt better in all of my life, and there seems to be no end of useful work for me for another thirty years or so. Of course, I am referring to what was opened up for me in the Island of Jamaica.

The enclosed clipping tells you a little about my work there which started back in 1946. What has happened since I did the planning for the Doctor's Cave Beach Club at that time would read like a fairy story. It was a great piece of good fortune that I was able to get my start at such a conspicuous spot on the Island. The complete success there led to my being employed by the Government as indicated briefly in the clipping.

Just as soon as I can help Alice to place matters in order here we return to the Island to look after several private projects and to supervise an endless amount of work which the Government has decided to do under my plans and designs already laid out. So, we will be gone for many weeks. You might try to find Grand Turk island on the map; it is likely that we will be going there as one of our places of operation.

So, we salute you and send our best wishes to all.

As ever,

SYDNEY.

(Part of the clipping referred to in the letter is printed below)

EXPERT COMES TO STUDY SEA EROSION

Mr. Sydney Makepeace Wood, internationally-known erosion control engineer of Florida, U. S. A., is in the island on the invitation of the Public Works Department to examine and make recommendations concerning erosion on seafront properties.

Mr. Wood is the inventor of a new method of com-

bating erosion caused by waves and offshore water currents. It is pointed out that this method, by the construction of groynes, would save the beaches of Jamaica to the considerable benefit of the tourist trade.

This specialized work was first done in Jamaica by Mr. Wood as far back as 1946 when he designed the groynes at Doctor's Cave Bathing Club. The beach there has been completely restored, the new been completed and the formation of the beach as a yards.

The first job done by the PWD under Mr. Wood's direction was at St. Margaret's Bay in Portland. Two of the four groynes planned for this area have been completed nad the formation of the beach as a result is such—a fill of about 9,000 cubic yards of sand—that it is no longer necessary to move back the railway and road as had been contemplated before Mr. Wood's arrival.

THE MOST IMPORTANT RESPONSIBILITY

One of the greatest challenges the railroad industry faces continues to be whether it will get high caliber youth to enrich its organizational blood stream—to carry out the best traditions of continued progress under private enterprise.

Clarence B Randall, President of Inland Steel Co., packs a world of wisdom on that problem in his book, "A Creed for Free Enterprise."

He calls the selection and training of young men for responsibility in industry the "most absorbing subject of all." How many railroad officials ever so much as think of it in that light!

To explain what he means he says, "The businessman who overlooks this important part of his job not only dooms his company to mediocrity in the next generation, but robs himself of one of the deepest satisfactions in life. There is no greater thrill than to choose or promote a young man because he seems to have unusual promise, and then to find this judgment overwhelmingly justified by the experience of the passing years.

"The men we have picked or advanced provide a much surer index to our own ability than the plants we have built. Most of us spend our own business lives playing on a team we didn't select, and to be thought well of by our successors requires that we do not pass on to them a heritage of personnel blunders.

"Some may have formal education, but many will not, and it is still the glory of our country that it doesn't matter. It is staying uneducated that dooms the man, not the starting that way. No man can help it if he has to leave school to support his parents, but he very much can help it if he wants an education thereafter."

The same day we read that inspiring message we read in the Santa Fe Magazine an address given by J. L. Lee, Manager of the Santa Fe's Communications Department at Galveston, Tex. He spoke to the 1952 graduating class of Cleburne High School at Cleburne, Texas, about "A Career in Railroading." And from the way he expressed himself we are sure he aroused the enthusiasm and interest of many of the graduates he addressed. How much more constructive that than the complete apathy several

engineering graduates have recently complained of when they went out of their way to try to get a job with a railroad!

Modern Railroads

Annual Report of the Editor of The Illinois Engineer

The primary purposes of THE ILLINOIS ENGINEER are (1) to keep the membership informed concerning society business and progress and (2) to keep them informed concerning the thinking and activity going on in the engineering profession at all levels,—local, state, and national. We propose to do this within the limits of the budgeted amount allowed us by the Board of Direction.

A few figures concerning magazine costs should always be presented in the Editor's report. Of course we kept within our budget during the past year. I expect that should be understood without stating. The total gross cost of the magazine was \$3557.22. The income from advertising was \$1650.93, so that the net cost was \$1906.29. Assuming an average membership of 1750, the unit net cost of the magazine was approximately \$1.09 per member for the year. The income from advertising was practically the same in 1953 as it was in 1952. As has been recognized for a long time, we need more advertising.

We wish to take this opportunity to thank Retiring President Brichler for his conscientious cooperation throughout the past year. Particularly we want to express our appreciation for his monthly "President's Message." He never failed to send it in and it was always on time. The Executive Secretary's office has continued its monthly cooperation for which we are grateful.

Special mention should be made of the work of the Publicity Committee of the Chicago Chapter. They have almost swamped us with material, including pictures. We hope that they understand that space limitations has been the only thing that has kept us from using all of it and we hope that they will continue the good work. Other chapters have also done very well but we would be glad to have items of interest from every chapter. Chapter officers should be reminded that upon decision made by the Board of Direction, Chapter Minutes are no longer published in THE ILLINOIS ENGINEER so that word of current events in the Chapter should be sent directly to the Editor by chapter members.

Finally, we want to thank the entire membership for its continued and, we hope, continuing interest and co-operation in the preparation and publication of our magazine. We are still far from the saturation point in the number of articles and pictures we can use and we hope that you will continue to send them in. As we have said in the past, put your criticisms, good or bad, of any matters of interest to the Society, down on paper, send them to us, and if they are *printable*, we'll put them in THE ILLINOIS ENGINEER.

W. A. OLIVER, Editor.

When you are discouraged because you are in the valley, remember that every valley reaches up to the hills.

PROFESSIONAL DIRECTORY

DE LEUW, CATHER & COMPANY

CONSULTING ENGINEERS

Transportation, Public Transit and Traffic Problems
 Industrial Plants Grade Separations
 Railroads Expressways
 Subways Tunnels
 Power Plants Municipal Works
 150 North Wacker Drive 79 McAllister Street
 Chicago 6, Illinois San Francisco 2, Calif.

ALVORD, BURDICK & HOWSON

Water Works Water Purification Flood Relief
 Sewerage Sewage Disposal Drainage Appraisals
 Power Generation

20 NORTH WACKER DRIVE CHICAGO 6, ILL.

JENKINS, MERCHANT & NANKIVIL

Consulting Engineers

Municipal Improvements Sewerage
 Power Development Water Systems
 Traffic Surveys Industrial Plants
 Flood Control Recreational Facilities
 Air Ports Investigations and Reports
 805 East Miller Street Springfield, Illinois

LEE I. OSBORN

Engineer-Contractor

Bridges Drainage & Levee Work
 Foundations Heavy Excavation
 Docks & Pile Driving Grading & Paving
 P. O. Box 2 Muscatine, Iowa

STANLEY ENGINEERING CO.

INDUSTRIAL POWER PLANTS—STEAM—DIESEL—HYDRO
 MUNICIPAL—WATERWORKS—SEWERAGE
 VALUATIONS—REPORTS

327 South LaSalle Street Hershey Building
 Chicago 4, Illinois Muscatine, Iowa

Use of this space is limited to members and associates of the Society. This is a dignified and excellent way to let engineers know that your firm can always accept another account. The price is very reasonable. A card or letter to the Secretary, 631 East Green Street, Champaign, Illinois, will bring full details.

The noblest contribution which any man can make for the benefit of posterity, is that of character. The richest bequest which any man can leave to the youth of his native land, is that of a shining, spotless example.

—ROBERT C. WINTHROP, American Statesman

The future belongs to those who prepare for it.

GREELEY AND HANSEN ENGINEERS

Water Supply, Water Purification, Sewerage, Sewage Treatment, Flood Control, Drainage, Refuse Disposal

220 SOUTH STATE STREET
 CHICAGO 4, ILL.

Compliments

of

A MEMBER OF THE SOCIETY

CRAWFORD, MURPHY & TILLY CONSULTING ENGINEERS

Water Works, Sewerage, Airports, Street Improvements, Traffic Surveys

PHONE 8-5619

755 S. GRAND AVE., WEST SPRINGFIELD, ILL.

RUSSELL AND AXON CONSULTING ENGINEERS

Civil—Sanitary—Structural
 Industrial—Electrical
 Rate Investigations

408 Olive Street, St. Louis 2, Missouri
 Municipal Airport, Daytona Beach, Florida

CRESCENT ENGINEERING COMPANY, INC.

Contracting and Consulting Electrical Engineers

Design, Supervision and Construction

Process Power and Lighting for Industrial Plants
 6455 S. CENTRAL AVENUE CHICAGO 38, ILL.

ROCK ISLAND BRIDGE & IRON WORKS, INC.

Charles N. Roberts, Member NSPE, President
 FABRICATED STRUCTURAL STEEL FOR
 BRIDGES AND BUILDINGS

1603 Mill Street Phone 6-4405
 Rock Island, Illinois

I hold every man a debtor to his profession; from the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavor themselves by way of amends to be a help and ornament thereunto.

Sir Francis Bacon

this sheeting HAS A "ROUND TRIP TICKET"

Unlike "one-way" sheeting, Armco Steel Sheetings can be used over and over again in such temporary applications as trenching, shoring, lagging and in cofferdams. With each re-use, its cost-per-job drops lower and lower.

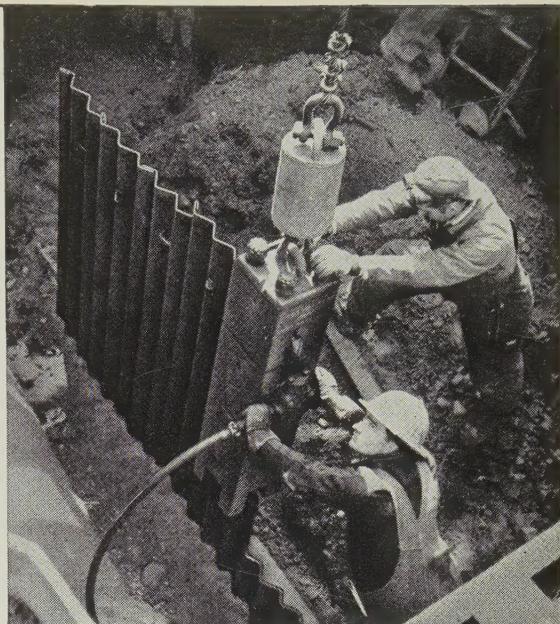
The small displacement area of Armco Sheetings makes driving easy and fast for either hand maul or power hammer. And a convenient hole near the top of each section simplifies pulling. It's light in weight for easy handling, yet the corrugated design provides ample strength.

To satisfy conditions, you can select the type of Armco Sheetings you need—Flange or Interlocking—from a choice of gages. Standard lengths are available up to 20 feet. For more complete data, write us.

ARMCO DRAINAGE & METAL PRODUCTS, INC.

631 Princeton Ave.
Springfield, Ill.

310 S. Michigan Ave.
Chicago, Illinois



**ARMCO
STEEL SHEETING**



**PREFERRED
for city mains...
and sewers**



**specify CLAY pipe
and be sure**

cpa CLAY PRODUCTS ASSOCIATION

100 North La Salle St., Chicago 2, Ill.



**ORNAMENTAL
METALWORKS COMPANY**

Steel Stairs and Metal Railings
Miscellaneous Iron & Structural Steel
Cast Iron Frames & Covers

Manhole Steps
Pipe Railing
Flag Poles
Weir Plates
Bronze Bolts
Grating & Frames
Stop Plates & Grooves
Steel Doors & Windows
Stainless Steel, Bronze & Aluminum
Aluminum Sash and Doors
Thresholds

440 South Franklin Street, Decatur, Illinois

PHONE 8-3446

Engineering Societies Personnel Service, Inc.

New York Chicago Detroit San Francisco
 84 East Randolph Street, Chicago 1, Ill. STate 2-2748

These items are from information furnished by the Engineering Societies Personnel Service, Inc., Chicago. This SERVICE is operated on a co-operative non-profit basis by the Illinois Society of Professional Engineers, and the national societies of Civil, Electrical, Mechanical and Mining and Metallurgical Engineers. Apply to ESPS, Chicago and the key number indicated. Prepared ENGINEERS AVAILABLE advertisements limited to 40 words, with typed resumé attached may be submitted to ESPS, Chicago by members of the Illinois Society of Professional Engineers at no charge.

If placed in a position as a result of an Engineers Available or Position Available advertisement, applicants agree to pay the established placement fee. These rates are available on request and are sufficient to maintain an effective non-profit personnel service. A weekly bulletin of positions open is available to subscribers. Apply E.S.P.S., Chicago.

SPECIAL NOTICE

Wednesday 30th, 1954, will be the last Wednesday night the office will be open evenings until after Labor Day. Watch this space for the announcement telling when we will resume being open one night a week.

BONNELL H. ALLEN, Manager

MEN AVAILABLE

Designer M.E. 27. Three yrs. design, layouts and specifications of mechanical equipment. \$5700. Chicago. 910-PE

Sales Engr. Ch.E. 32. Six yrs. handle accounts of major petroleum processing, petrochemical, pipelines, steel mills, etc. and make customer contacts. Two yrs. service and maintain automatic photographic equipment. \$8400. Midwest. 911-PE

Elect. Designer. E.E. 44. Three yrs. design and supervision of installation of control systems and electrical equipment on movable bridges. Twenty yrs. supervision and installation of electrical equipment. \$6000. U.S. 912-PE

Ind. Mgmt. Engr. 39. Twelve yrs. doing installations, wage incentive, methods, cost estimating, time study, plant layout and standards. Ten yrs. charge of job lot cost dept. in mechanics hand tools. \$8000. Midwest. 913-PE

Factory Mgr. Met. 38. Six yrs. sales and metallurgical service. Nine yrs. processing and quality control and liaison between customer and mill. \$12,000. U.S. 914-PE

Ind. Mgmt. Engr. Ind. Engr. 27. Three yrs. supervised time study men, set & revised standards, job analysis, wage incentive, and some layout work. Four mos. analysed time studies on machine prods. \$5700. Chicago. 915-PE

Resident Engr. C.E. 28. Two yrs. highway and drainage design, resident engr. and material handling. Ten mos. design, estimating, plant layout, maintenance of equipment and machinery. \$5400. Midwest. 916-PE

Field Engr. C.E. 27. Two yrs. structural steel detail draftsman. Nine mos. field engr. on segment of large construction project. \$4800. Chicago. 917-PE

Junior Civil C.E. 26. One yr. designing, drafting, quantity take off, progress and quantity reports. Nine mos. design and drafting of hydraulic projects. \$5000. Chicago. 918-PE

Constr. Supt. C.E. 44. Three yrs. design, estimate and supervision of steel and concrete structures. One yr. supervise field parties for oil refinery. \$6000. U.S. 919-PE

Off. Engr. C.E. 35. Nineteen mos. supervision of constr. for a consulting engr. Six yrs. estimating, personnel and superv. of constr. for contractor. Two yrs. railway bridge draftsman. \$7000. Chicago. 920-PE

Off. Engr. C.E. 39. Three yrs. reinf. conc. design and drafting. Nine yrs. make & check plans for estimates for R.R. Construction. \$5700. Chicago. 921-PE

Development E.E. 31. Two yrs. design, development testing of transformers, coils for electronic application. Six mos. instructor in math. \$4500. Midwest. 922-PE

Electronic Engr. B.S. Physics. 29. Thirty-five mos. design and construction of electronic equipment. Two yrs. installation, repair, & maintenance of radio equipment. \$5200. Midwest. 923-PE

Designer C.E. 31. Seven mos. design on water supply. Three yrs. designing, supervision, and estimating on com. and industrial buildings. \$6000. Chicago. 924-PE

Mach. Designer. 29. Seven yrs. design, layout and detailing on tool, mining, aircraft and food processing equip. \$5400. Midwest. 925-PE

Plant Engr. 37. Eight yrs. resp. for designing, detailing and expediting of T.V. equipment. Design and detail machines for paper industry. \$6400. Chicago. 926-PE

POSITIONS AVAILABLE

Die Designer. Age: up to 45. 5 plus yrs. exp. in die design work and preferably bending die. Knowledge of operation of press brakes and notching presses. Duties: Start as die designer and if capable will lead to department head. For a manufacturer of special heavy equipment. Salary: \$550-\$600 per month. Employer will pay fee. Location: W. Pa. C-1938(a)

Chief Industrial Engr. Deg. preferred. Age: 30-40. Duties: convert plant of 1600 employees from 50-50 Halsey to standard hour plan. Compile standard data; and direct 25 industrial engineers on maintenance of incentive plans, indirect labor controls, cost reduction programs, standards, procedures and methods, plant layout, etc. For a manufacturer of wood and steel products.

Sal: \$10,000 to \$12,000 per yr. Location: Wisconsin. C-1950

Sales Manager. 5 plus yrs. exp. in sales management of heavy transformer (power). Duties: heading up sales organization of about 20 men selling mostly to contractors and O.E.M.'s. For a manufacturer of transformers. Sal: \$8-9000 plus override. Employ-

er will negotiate fee. Loc.: Chicago. C-1951

Sales Engineer. Grad. Mech. or equiv. Age: 30. 5 plus yrs. exp. in sales and industrial engineer. Knowledge of power plant and process Indus. Duties: establish 1 man sales office in Chicago. Must have contacts among consulting engineers, contractors, and industrials. Mfgr. High temperature high pressure pipe supports for process industries and power plants. Sal: \$7-9000. Employer might negotiate fee. Loc.: Chicago C-1952

Maintenance Engineer. Age: 25-45, 3 plus yrs. exp. in heat, lighting, and power maintenance. Knowledge of remodeling. Duties: maintenance problems of a chain of 17 stores in more or less of a staff capacity. For firm of retail stores. Sal: \$6-8000 per yr. Location: Chicago. C-1955

Estimator. Age: 30-45. 5 plus yrs. exp. estimating fabricated steel and structural shapes. Duties: estimating structural steel fabrications. For a fabricator of structural steel. Sal: \$6000. Employer will negotiate fee. Loc: Calumet Dist. C-1956

Field Engr. C.E. Age: up to 45. 4 plus yrs. exp. in design of structural or foundation work and/or construction work. Know: building and hwy. construction and timber structures helpful. Duties: service engr., contacting members of trade association and doing promotional type work. For a Trade Assoc. of wood. Sal: \$5-600 month and exp. Loc: South. Employer will pay fee. Considerable travel and car desirable. C-1957

Engineer Des. & Develop. Grad. Mech. Age: about 40. 10 plus yrs. exp. in des. and development of heavy & semi heavy eqpt. Know: Steel & metallurgy. Duties: Design & development of heavy & semi-heavy equipment and give expert technical advice. Should be capable of accepting position of Chief Engr. after relatively short indoctrination period. For mfr. of R. R. eqpt. Sal: \$700 plus. Loc: Hdqr. Chicago. Empl. will negotiate fee. C-1960

Manager Highway Dept. Grad. C.E. Age: 30-45. 10 yrs. exp. in highway work 3 of which must have been in respon. positions. Duties: write clear reports and make effective oral presentations to both technical & lay groups. Must be effective in public contacts & should have sound public relations sense. Appl. by letter only giving complete personal, education & exp. record, Activities and sample of professional report. For a National organization interested in highway improvement. Sal: About \$9000 depend. on exp. and ability. Location: East C-1964